

Title (en)  
VIBRATION WAVE MOTOR AND OPTICAL DEVICE

Title (de)  
VIBRATIONSWELLENMOTOR UND OPTISCHE VORRICHTUNG

Title (fr)  
MOTEUR À ONDES DE VIBRATION ET DISPOSITIF OPTIQUE

Publication  
**EP 4343401 A3 20240710 (EN)**

Application  
**EP 24156535 A 20181017**

Priority  
• JP 2017202118 A 20171018  
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• JP 2018038629 W 20181017

Abstract (en)  
A vibration wave motor includes an element configured to be displaced by application of voltage, and an annular elastic body having a bottom surface coming into contact with the element and a drive surface having a groove, configured to drive a moving element by a vibration wave produced on the drive surface by displacement of the element. The element has a density of  $4.2$  to  $6.0 \times 10^{<sup>3</sup>}$  kg/m<sup>3</sup>. A value of  $[(T/B) - W]$  is in a range of  $0.84$  to  $1.94$ , where  $T$  represents a depth of the groove,  $B$  represents a distance from a bottom part of the groove to the bottom surface, and  $W$  represents a radial width of the elastic body.

IPC 8 full level  
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CPC (source: CN EP US)  
**G02B 7/09** (2013.01 - CN); **G02B 7/10** (2013.01 - CN); **H02N 2/005** (2013.01 - CN); **H02N 2/0065** (2013.01 - EP); **H02N 2/0075** (2013.01 - CN); **H02N 2/12** (2013.01 - CN US); **H02N 2/14** (2013.01 - CN); **H02N 2/142** (2013.01 - CN EP); **H02N 2/16** (2013.01 - CN US); **H02N 2/163** (2013.01 - CN EP); **H10N 30/20** (2023.02 - CN US); **G02B 7/10** (2013.01 - EP); **H10N 30/8536** (2023.02 - EP); **H10N 30/8542** (2023.02 - EP)

Citation (search report)  
• [X] JP 2016052188 A 20160411 - DAICEL CORP  
• [E] EP 3480935 A1 20190508 - NIKON CORP [JP]  
• [A] US 2017153410 A1 20170601 - HAYASHI JUMPEI [JP], et al

Designated contracting state (EPC)  
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**EP 3700079 A1 20200826**; **EP 3700079 A4 20210714**; **EP 3700079 B1 20240327**; CN 111213313 A 20200529; CN 111213313 B 20231017; CN 117335685 A 20240102; EP 4343401 A2 20240327; EP 4343401 A3 20240710; JP 2022171658 A 20221111; JP 2023159245 A 20231031; JP 7136116 B2 20220913; JP 7338760 B2 20230905; JP WO2019078239 A1 20201119; TW 201924207 A 20190616; US 11522473 B2 20221206; US 11757381 B2 20230912; US 2020350838 A1 20201105; US 2023062176 A1 20230302; US 2023369993 A1 20231116; WO 2019078239 A1 20190425

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